

Comparisons of Job Characteristics

Focus Occupation: **Industrial Engineers (17-2112)**

Associated Occupation: **Mechanical Engineers (17-2141)**

[Compare Knowledge](#)

[Compare Skills](#)

[Compare Abilities](#)

[Compare Detailed Work Activities](#)

[Compare Tools and Technologies](#)

<<	Focus occupation element is much lower
<	Focus occupation element is lower
0	Focus occupation element is at a similar level
>	Focus occupation element is at a higher level
>>	Focus occupation element is at a much higher level

Knowledge

Similarity of Focus Occupation to Associated Occupation: 93

Focus Occupation: Industrial Engineers (17-2112)

Associated Occupation: Mechanical Engineers (17-2141)

Associated Occupation's Key Knowledge Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating	Evaluation of Focus Occupation	
Engineering and Technology	5.7	21.5	18.0	<<	Extensive education and/or training may be required
Design	5.2	21.0	14.8	<<	Extensive education and/or training may be required
Mathematics	9.2	18.1	15.6	<	Expanded education and/or training may be required
Mechanical	6.8	18.1	15.6	<	Expanded education and/or training may be required
Physics	4.3	15.3	8.5	<<	Extensive education and/or training may be required
Production and Processing	6.0	14.2	17.4	>	Current knowledge level is likely sufficient

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Skills

Similarity of Focus Occupation to Associated Occupation: 62

Focus Occupation: Industrial Engineers (17-2112)

Associated Occupation: Mechanical Engineers (17-2141)

Associated Occupation's Key Skills Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating	Evaluation of Focus Occupation	
Mathematics	6.2	15.3	10.3	<<	Extensive development of skills in this area may be required
Complex Problem Solving	9.1	14.8	12.8	<	A higher skill level may be required
Judgment and Decision Making	9.4	14.1	10.7	<<	Extensive development of skills in this area may be required
Science	4.5	13.6	3.7	<<	Extensive development of skills in this area may be required

Operations Analysis	5.0	13.0	4.7	<<	Extensive development of skills in this area may be required
Systems Evaluation	6.4	12.0	9.5	<	A higher skill level may be required
Technology Design	2.6	11.0	4.4	<<	Extensive development of skills in this area may be required
Programming	2.2	7.5	3.3	<<	Extensive development of skills in this area may be required
Installation	1.7	6.3	1.0	<<	Extensive development of skills in this area may be required

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Abilities		Similarity of Focus Occupation to Associated Occupation: 93			
Focus Occupation: Industrial Engineers (17-2112) Associated Occupation: Mechanical Engineers (17-2141)					
Associated Occupation's Key Abilities Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating	Evaluation of Focus Occupation	
Deductive Reasoning	10.6	15.8	12.5	<<	Extensive improvement in abilities may be required
Written Comprehension	11.0	15.8	14.6	0	Current ability level may be sufficient
Mathematical Reasoning	6.3	15.7	10.5	<<	Extensive improvement in abilities may be required
Information Ordering	9.9	15.4	11.8	<<	Extensive improvement in abilities may be required
Near Vision	11.1	13.3	12.5	0	Current ability level may be sufficient
Number Facility	6.3	13.0	8.0	<<	Extensive improvement in abilities may be required
Category Flexibility	9.0	12.7	10.7	<	Some improvement in abilities may be required
Visualization	7.5	12.7	10.3	<	Some improvement in abilities may be required
Selective Attention	8.7	11.0	10.7	0	Current ability level may be sufficient
Perceptual Speed	7.4	10.6	7.4	<<	Extensive improvement in abilities may be required

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Activities that Both Occupations Have in Common		Similarity of Focus Occupation to Associated Occupation: 89
Focus Occupation: Industrial Engineers (17-2112) Associated Occupation: Mechanical Engineers (17-2141)		
Work Activities	Exclusivity of Activity	
Advise clients regarding engineering problems	67	
Analyze engineering design problems	69	

Analyze scientific research data or investigative findings	27
Analyze technical data, designs, or preliminary specifications	47
Calculate engineering specifications	64
Communicate technical information	4
Confer with engineering, technical or manufacturing personnel	25
Coordinate engineering project activities	71
Design manufacturing processes or methods	77
Develop policies, procedures, methods, or standards	21
Develop safety regulations	74
Direct personnel in support of engineering activities	74
Evaluate engineering data	60
Evaluate manufacturing or processing systems	68
Examine engineering documents for completeness or accuracy	62
Explain complex mathematical information	30
Follow manufacturing methods or techniques	73
Follow statistical process control procedures	73
Improve test devices or techniques in manufacturing, industrial or engineering setting	75
Inspect facilities or equipment for regulatory compliance	51
Lead teams in engineering projects	73
Plan testing of engineering methods	72
Prepare technical reports or related documentation	22
Read blueprints	10
Read technical drawings	7
Resolve engineering or science problems	46
Understand engineering data or reports	48
Use drafting or mechanical drawing techniques	50
Use library or online Internet research techniques	21
Use mathematical or statistical methods to identify or analyze problems	30
Use project management techniques	47
Use quality assurance techniques	61
Use scientific research methodology	21
Use technical information in manufacturing or industrial activities	67
Use technical regulations for engineering problems	61
Use total quality management practices	85

Not all positions in these occupations will necessarily perform all of the listed activities. The exclusivity rating is an indication of how unique the activity is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations engage in that activity.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Tools and Technologies that Both Occupations Have in Common

Similarity of Focus
Occupation to Associated
Occupation: 76

Focus Occupation: Industrial Engineers (17-2112)
Associated Occupation: Mechanical Engineers (17-2141)

Tools and Technologies	Exclusivity
Business function specific software	1
Cameras	2

Computer printers	2
Computers	1
Content authoring and editing software	1
Development software	4
Electrical measuring and testing equipment	7
Hydraulic presses	25
Indicating and recording instruments	2
Industry specific software	1
Integrated circuits	18
Kinetic power transmission	90
Laboratory environmental conditioning equipment	24
Laboratory ovens and accessories	15
Length and thickness and distance measuring instruments	2
Light and wave generating and measuring equipment	4
Metals and metallurgy and structural materials testing instruments	15
Pressure measuring and control instruments	10
Temperature and heat measuring instruments	6
Transducers	23
Viewing and observing instruments and accessories	4

Not all positions in these occupations will necessarily use all of the listed tools and technologies. The exclusivity rating is an indication of how unique the tool or technology is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations use that tool or technology.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.